IN THE CLAIMS:

1. (Previously Presented) In a two stage pulse tube refrigerator comprising a working gas, a compressor, two or more pulse tubes, in which the hot ends of the pulse tubes are remote from the line connecting the compressor to the warm end(s) of the regenerators, regenerators, and a buffer volume, the improvement comprising adding a passive rectification circuit to change the pulsating flow into and out of the buffer volume to circulating flow through the buffer volume, where the rectification circuit includes a cooling means.

2. (Original) The refrigerator of claim 1 where the rectification circuit includes one or more passive orifices at the hot ends of the pulse tubes through which the gas flows to achieve phase shifting.

3. (Currently Amended) In a two stage pulse tube refrigerator comprising a working gas, a compressor, two or more pulse tubes, in which the hot ends of the pulse tubes are remote from the line connecting the compressor to the warm end(s) of the regenerators, regenerators, and a buffer volume, the improvement comprising adding a passive rectification circuit to change the pulsating flow into and out of the buffer volume to circulating flow through the buffer volume, where the rectification circuit includes a cooling means, and wherein said passive rectification circuit is the buffer volume.

4. (Cancelled)

5. (Previously Presented) The refrigerator of claim 1 further comprising a double orifice control.

6. (Previously Presented) The refrigerator of claim 1 further comprising an interphase control.

7. (Previously Presented) The refrigerator of claim 1 further comprising a bypass channel connecting through restrictors the warm end of the regenerators with the hot ends of the pulse tubes.

8. (Cancelled)

9. (Original) The refrigerator of claim 1 where the rectification circuit includes cooling fins.

10. (Original) The refrigerator of claim 1 where the passive rectification comprises check valves.